

INTRODUCTION

Burglar alarms are a good way to protect your home or office from intruders, but a CCTV system can be even better. An alarm might scare off an intruder and alert neighbours, but a CCTV camera could help catch those responsible. What's more, CCTV is no longer the domain of the rich; today's CCTV cameras can cost as little as £50, and a recording system as little as £60.

Even if you don't want a complicated security system, CCTV equipment can be useful. CCTV cameras can be easily connected to a standard TV, so you can see who's outside your front door or monitor your driveway using only a single camera and some cable.

This month, we've tested six CCTV cameras and the equipment you'll need to convert your computer into a cheap but powerful recording system. We've also tested four IP cameras, which are ideal if you want to monitor your home or office via the internet. Whatever you want to keep an eye on, we'll help you find the right equipment.

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UNDER SURVEILLANCE

If you want to keep an eye on your home or office when you're not around, the right CCTV equipment can make all the difference. Watch and learn, as we round up 12 cameras and recording devices

Choosing... CCTV Equipment

Before you buy, it's important to consider what you want from your CCTV system. For example, you should consider whether you need a camera that works at night, whether you want a camera that can connect to a network, whether you want to record from your camera and whether you need sound as well as video.

SEE THE LIGHT

If you want to monitor or record at night, you'll need a camera with night vision. These have infrared light-emitting diodes (LEDs) that illuminate the area, allowing the camera to see in complete darkness, albeit in black and white. Most of the CCTV cameras in this test have night vision, but annoyingly none of the IP cameras we found had this feature. Some IP cameras do a good job of recording in near-darkness, but with all the lights out they can't see at all.

To use the CCTV cameras in this review, you'll need to run a cable between each camera and your TV or recorder. Wireless CCTV cameras are available but, as the picture is not encrypted before being transmitted, they are not ideal for filming a private area. Instead, we've reviewed four wireless IP cameras. These use your

existing wireless network to transmit video, so they can be secured using either WEP or WPA encryption.

RECORD BREAKERS

Whether you use traditional CCTV or IP cameras, you might want to record video clips whenever someone enters the picture or during certain times of the day. If you use an IP camera, this involves running software on a computer connected to the same network.

If you're using traditional CCTV cameras, you could connect one to a traditional VCR. This allows for just one camera, though, and you'll need to change the tapes regularly. More annoyingly, if something does occur you'll have to scan through the entire tape to find it. A better solution is to use a PC recording interface. These connect up to four cameras to one PC, so the computer can monitor for motion and record when necessary. We've reviewed two interfaces on page 112.

If you want to record sound as well as video, you'll need to choose products carefully. Only a few cameras have a built-in microphone, and only one of the two PC recording interfaces supports sound recording. If you decide to buy a wired CCTV camera, remember that you might also need extra cables and power supplies.



X-VISION VIS225IR

★★★★

£46 inc VAT



At just £46 including VAT, the VIS225IR is the cheapest camera in the group. Don't forget that you'll also need a power supply, though, which will add an extra £6 to the cost.

It provides up to 5m of vision in complete darkness and can be mounted indoors or outdoors. Its cable is just 14cm long, though, so you must make sure any connections are waterproof if you use the camera outdoors.

The picture produced in daylight was on a par with that of the Domia Secure camera (right), but its colour accuracy was poor; it turned our thief's shirt from dark blue to purple. The Domia Secure camera captures a wider field of view, too.

In complete darkness, this camera produced the poorest image of the four cameras with night vision. Only the centre of the image was illuminated and our thief's face was blurry. Simply Automate's Domia Secure camera is just a little more expensive and far better.

COLOUR CCTV CAMERA 350 lines, composite video, power connectors, weatherproof PART CODE VIS225IR
SUPPLIER www.y3k.com DETAILS www.x-vision.co.uk

- ✓ Affordable
- ✗ Poor image quality

SIMPLY AUTOMATE Domia Secure ¼ CCD Camera

★★★★★

£55 inc VAT



This camera is relatively small and can be mounted indoors or outdoors. If mounted outside, the 40cm cable is just about long enough to stretch indoors.

This camera has two main benefits over the VIS225IR. Its 12 infrared LEDs have a range of 15m rather than the VIS225IR's 5m, and it has a much wider field of view. The image quality in daylight isn't stunning, with inaccurate colours, but you'd still be able to recognise someone's features. At night, the quality was good enough to pick out our thief's face.

You'll need to buy a power adaptor to go with it, but the DS708CAM is still great value. If you want to build a cheap CCTV recording system, or just a single camera for monitoring your property, this is a great choice.

COLOUR CCTV CAMERA 420 lines, BNC video, power connectors, weatherproof PART CODE DS708CAM
SUPPLIER Simply Automate 08456 443330
DETAILS www.simplyautomate.co.uk

- ✓ Wide viewing angle; inexpensive
- ✗ Image quality good but not great

SWANN High Resolution BulletCam

★★★★★

£70 inc VAT



The BulletCam is only 80mm long and, as it's white, is ideal for ceiling mounting. It's weatherproof, so you can mount it outdoors if you wish. It has a captive 1.5m lead, which is also white, but a black 10m power and video lead is included in the box along with a power supply. This allows you to connect it up without needing to buy anything else.

Quality in daylight was impressive, and this was one of only a few cameras that managed to get the colour of our thief's shirt correct. The image was slightly blurry, though, and there are no infrared LEDs for night vision. It has no microphone, either. It isn't as stealthy as the X-Vision Covert Cam and, although small, it's still easily recognisable as a camera. If you don't want a hidden camera, though, the bundled cable and power supply make the BulletCam better value.

COLOUR CCTV CAMERA 420 lines, BNC video, power connectors, weatherproof PART CODE SW-C-CCBC
SUPPLIER www.maplin.co.uk DETAILS www.swann.eu.com

- ✓ Power supply and 10m cable
- ✗ No night vision

X-VISION Covert Cam PC811D

★★★★★

£81 inc VAT



The Covert Cam is built to look like an infrared sensor of the type used by burglar alarms. The camera itself is hidden behind a small black hole in the plastic case.

It produced good pictures in the daytime. Colours were realistic and the amount of detail captured was slightly better than the more expensive VIS349. It has a microphone, too. Anyone speaking at a normal volume near the camera could just about be heard.

Short cables extend less than 20cm from the rear of the camera, so you'll need an extension cable to connect it up. With no infrared LEDs, it's no good at night time.

The Covert Camera is a little expensive and you'll need to add both a power supply and an extension cable. It does produce a good picture, though. The BulletCam is better value, but this could be ideal if you want a hidden camera.

COLOUR CCTV CAMERA 420 lines with audio, BNC video, power, phono audio connectors
PART CODE PC811D SUPPLIER www.y3k.com
DETAILS www.x-vision.co.uk

- ✓ Cleverly disguised
- ✗ No night vision

SWANN Super Night Owl

★★★★

£100 inc VAT



There's nothing particularly covert about the Super Night Owl. With a whopping 105 LEDs, it provides 50m of night vision.

We were slightly underwhelmed by the Night Owl's image quality when recording in darkness. Although it doesn't white out the centre of images like the Simply Automate camera, the picture was disappointingly blurry. By day, the Night Owl had trouble reproducing colours accurately. It produced a reasonable level of detail, though, and it was easy to recognise our thief.

Its price might be high, but like the BulletCam the Night Owl is sold with a 20m power and video lead and a power supply. It's weatherproof, too, so you can mount it on an external wall. This is a good choice if you need to flood a large area with infrared light, but Simply Automate's camera is better for most purposes.

COLOUR CCTV CAMERA 420 lines, BNC video, power connectors, weatherproof PART CODE SW-C-SNO
SUPPLIER www.maplin.co.uk DETAILS www.swann.eu.com

- ✓ Bright picture at night; cable and power supply included
- ✗ Expensive given its picture quality

X-VISION VIS349

★★★

£140 inc VAT



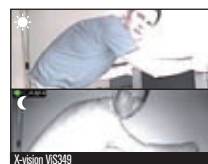
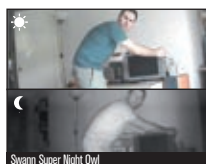
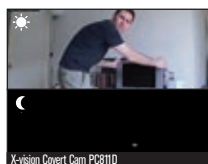
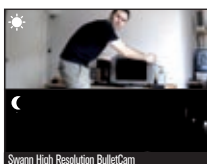
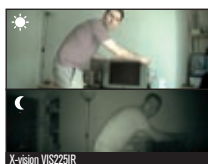
With a removable sun and rain shield, the VIS349 looks businesslike. It has a 60cm captive cable so you can mount it outside, using the supplied bracket, and connect the power and video cables indoors.

The VIS249 claims to have a higher resolution than the other cameras here, but we were disappointed by its image quality. Images were always too bright during the day, making our thief's face too white and rather hard to recognise. When the lights are out, the 18 infrared LEDs illuminate around 20m of the shot. This lights up the scene well, and the camera did a decent job of capturing an image of the room. There was lots of noise in the picture, but it included a good view of our thief's face.

No power supply or extension cable is provided, so you'll have to budget for them. With the camera alone costing over £140, this is not good value.

COLOUR CCTV CAMERA 500 lines, BNC video, power connectors, weatherproof PART CODE VIS349
SUPPLIER www.y3k.com DETAILS www.x-vision.co.uk

- ✓ Large area visible at night
- ✗ Disappointing quality in daylight



HAWKING TECHNOLOGY Net-Vision Wireless-G Network Camera

★★★★

£84 inc VAT

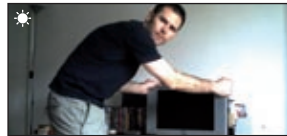


Hawking's setup wizard is the best in the group. It has a step-by-step process that helps you connect to the camera and make the necessary setting changes. It attempts to configure settings automatically for viewing the camera over the internet, too, but this didn't work with our UPnP router.

The camera lens has a manual focus ring which can be tilted up or down by around 10°. The web interface looks good, and as it uses Java it works with most browsers. The options are limited, though. There's no way to upload images to an FTP server and there's no way to record a video when motion is detected.

Only one Dynamic DNS service is supported, and it costs \$25 (around £12) per year to use. There's an online viewing service, but this also costs money. The Windows viewing utility is basic, although it allows you to schedule recording times and view multiple cameras at once. Image quality isn't bad, with decent colours and plenty of detail, but with no infrared illumination there's no hope of recording a useful picture in total darkness. There's no audio streaming.

The Net-Vision is impressively cheap, but it lacks many useful features. We recommend saving up for something better.



SUMMARY

- ✓ Very low price
- ✗ Only one DDNS service
- ✗ Limited detection options

WIRELESS IP CAMERA 640x480 resolution, 10/100Mbit/s wired, 802.11b/g wireless, WEP/WPA encryption, motion detection
PART CODE HNC290G
SUPPLIER www.redstore.com
DETAILS www.hawkingtech.com

D-LINK DCS-2120

★★★★

£172 inc VAT



D-Link's DCS-2120 comes with a removable aerial that you can replace with a larger antenna for better range if necessary. You need to use a wired Ethernet network to set up the camera. The discovery utility had trouble finding the camera on our test network. Once found, it was simple to record the audio/video feed, although you need to use Internet Explorer and install an ActiveX plug-in. You can then enter the name of your wireless network and the network security settings, allowing the camera to connect wirelessly in future.

The camera works with five Dynamic DNS providers, so it's easy to put the camera online using a normal broadband connection. You can set it to email you photos when motion is detected. Three areas in the image can be monitored for movement and you can change the sensitivity for each one. D-Link supplies Windows software for recording video when motion is detected, and you can also monitor live video and audio via a supported 3G phone or PDA.

There are four video resolutions available, ranging from 160x120 to 640x480. In daylight, the image quality at most resolutions was good. It produced a respectable image in low light, but it's useless in total darkness.

This is the best IP camera here and its price has fallen a little, but it's still quite expensive.



SUMMARY

- ✓ Great sound and video quality
- ✓ Good web interface
- ✗ Useless in the dark

WIRELESS IP CAMERA 640x480 resolution, 10/100Mbit/s wired, 802.11b/g wireless, WEP/WPA encryption, motion detection
PART CODE DCS-2120
SUPPLIER www.dabs.com
DETAILS www.dlink.co.uk

VIVOTEK IP7137 802.11g Wireless Network Camera

★★★★

£176 inc VAT



In many respects, the IP7137 is almost identical to D-Link's DCS-2120. The similarities become obvious once you insert the installation CD. This runs a search tool that's identical to the one provided by D-Link, and had similar problems finding the camera on our network. The same IP Surveillance software is also included.

Unlike D-Link's version, the IP7137 doesn't have a removable wireless antenna. Its focus ring isn't as easy to adjust, either, as it sits flush with the body of the camera. Vivotek's web interface isn't as well designed as D-Link's, but it offers an almost identical set of options. The IP7137 offers a choice of DDNS providers, plus email, FTP and video quality settings. It can monitor three areas for motion, recording video or saving a JPEG image when movement is detected.

In daylight, the images produced were marginally poorer than those from the D-Link camera. It recorded an image in low light, but couldn't reproduce colours accurately, turning white areas yellow. Like the other IP cameras, it's useless in total darkness.

This is a decent IP camera, but the D-Link DCS-2120 feels more solid, has better help features and is marginally cheaper.



SUMMARY

- ✓ Great sound and video quality
- ✗ Poor web interface
- ✗ Hard to focus

WIRELESS IP CAMERA 640x480 resolution, 10/100Mbit/s wired, 802.11b/g wireless, WEP/WPA encryption, motion detection
PART CODE IP7137
SUPPLIER www.ipcctv.co.uk
DETAILS www.vivotek.com

MARMITEK IP RoboCam 8

★★★★

£199 inc VAT



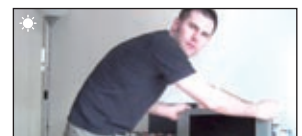
The RoboCam 8 is the only camera in the group that can be panned around the room. It has two separate motors that can move the lens horizontally and vertically.

The installation wizard took two searches to find the camera on our wired network. The RoboCam supports WPA wireless encryption, but we couldn't get it to connect to our WPA-protected wireless network.

Unlike the other IP cameras here, the RoboCam doesn't have a built-in motion-detection system. To detect movement, you'll have to use the PC software and leave a computer running whenever you want to monitor the room. When viewing the camera via the web, you can use either an ActiveX plugin, which we got to work only using Internet Explorer, or Java, which is useful for Firefox users. You can also view video via a compatible 3G mobile phone. The camera has no microphone so, unlike the D-Link and Vivotek products, you can't listen in on what's happening near the camera.

The image quality from this camera isn't as good as that from the D-Link, with more noise and less detail. It couldn't produce a clear picture in low light and, like the other IP cameras, it's useless in the dark.

Unless you need to monitor a very wide area, the D-Link camera's superior performance in low light is probably more useful.



SUMMARY

- ✓ Can be controlled remotely
- ✗ Poor low-light image quality
- ✗ Useless in the dark

WIRELESS IP CAMERA 648x480 resolution, 10/100Mbit/s wired, 802.11b/g wireless, WEP/WPA encryption
PART CODE RoboCam 8 Wireless (U)
SUPPLIER www.simplyautomate.co.uk
DETAILS www.marmitek.co.uk

DOMIA

Harmony CCTV Server and PC DVR Card

★★★★

£160 inc VAT

Costing over £100 more than Y3K's USB DVR, Domia's recorder doesn't offer much more for your money. The video capture card is a PCI card, so you can't use it with a notebook, and with no audio inputs you can't record sound. Fortunately, the software interface is far less clunky than Y3K's XSW Lite. Although the PCI card only has four BNC inputs, you can also monitor and record feeds from IP cameras and even local webcams.

You'll need a powerful PC to use this kit. Even with the latest dual-core processor and 1GB of RAM in our test PC, its performance became noticeably sluggish when we asked the Harmony software to monitor three CCTV cameras and one IP camera. The video feeds remained smooth, but launching other applications took much longer than usual.

Unlike XSW Lite, Harmony allows you to move the viewing window and make it fill your whole screen. Motion detection can be configured separately for each camera and you can mask areas of the image you don't want to monitor. When movement is detected, the software can record a video clip or capture a JPEG image. There are also controls to begin recording manually.

Oddly, there's no way to schedule recordings at set times and there's no interface for reviewing recordings. You simply have to find the files in the folder you've specified. There's no easy way to configure the quality of video recorded, either. Harmony simply lists all the available codecs on your PC, leaving you to choose the right one and make the right settings. Make the wrong choice and a one-minute clip could consume 1GB of disk space. It isn't easy to monitor the system remotely, as each camera's feed has to be configured individually for viewing via Windows Media Player. There's a bewildering range of options, and you'll need to be able to open the correct ports on your broadband router.

The Harmony software in this kit has some advantages, but the lack of sound recording is disappointing and a few areas of the interface need work. At nearly three times the cost of Y3K's alternative, it's poor value.



SUMMARY

- ✓ Decent recording software
- ✗ Can't be used with notebooks
- ✗ No audio monitoring

PC-BASED CCTV RECORDER PCI interface, 4 channels, 4x BNC inputs
PART CODE HCCTVKIT
SUPPLIER Simply Automate
08456 443330
DETAILS www.simplyautomate.co.uk

Y3K

XUSB4DVR

★★★★★

£58 inc VAT



There's no escaping the fact that the XUSB4DVR looks rather cheap, but then it is the least expensive CCTV recording interface we've seen. The XSW Lite software looks dated and it can't be resized to fit your screen.

The USB box has four phono camera inputs but only two audio inputs, so you might have to choose which sounds you want to record. None of these is labelled, so it's tricky to match the audio and video from a camera. It uses phono video inputs, so many cameras will require a converter, which costs around £2.

You can schedule recording times for each camera, or by default all four cameras are set to record permanently. Motion detection has to be enabled for each camera and the detection schedule can be set independently for each. You can select an unlimited number of areas in each image to detect motion, but the single sensitivity control governs all four cameras. Motion detection worked well, though, recording the instant we moved into the frame. You can set a frame rate of up to 25 frames per second (fps) for each type of recording mode and each camera independently. You might set the continuous recording mode to 12fps, for example, to save disk space.

The software's interface for reviewing recorded events is clunky, but it's useful to have nonetheless. It isn't obvious how to select which camera to view or how to begin playback at a given time, but once we'd worked it out we found it easy to view each recording in slow motion, normal speed or fast forward.

The monitoring screen can be configured to view all four cameras at once or with one camera filling the whole window. You can also cycle between cameras in full-screen mode and choose how often they switch. Video can be viewed over the internet using a computer, 3G mobile phone or PDA, although this is tricky to set up.

The XUSB4DVR has its quirks, but with audio recording and a playback interface it also has some advantages over the competition. At just under £60, it's also excellent value.



SUMMARY

- ✓ Can be used with a notebook
- ✓ Audio from two cameras
- ✗ Clunky software

PC-BASED CCTV RECORDER USB interface, 4 channels, 4x phono inputs
PART CODE XUSB4DVR
SUPPLIER Y3K 08704 422020
DETAILS www.y3k.com

Labs verdict CCTV equipment

The products in this test provide an easy, cost-effective way to enhance the security of your home or office. Which is best for you will depend on exactly what you want to monitor, and where you want to view the video or still images.

If you just want to see who's at the front door, Simply Automate's Domia Secure ¼ CCD Camera is excellent value. You can plug it into just about any TV using an inexpensive BNC-to-phono adaptor and, unlike other cameras, it provides a surprisingly wide angle of view. When it's dark, the camera will switch to black and white. It costs less than £60, and is our Best Buy. For an extra £22, X-Vision's Covert Cam is perfect for monitoring areas in a stealthier manner.

If you already have a wireless network and you don't need to monitor in complete darkness, D-Link's DCS-2120 IP camera is a good choice. Its web interface offers a great range of options, and you can view both video and audio from any web browser or compatible mobile phone. Alternatively, its motion detection utility can email you a photo when anything moves. It's a good camera, but like most IP cameras it's annoyingly expensive.

CCTV CAMERAS



SIMPLY AUTOMATE

Domia Secure ¼ CCD Camera

★★★★★



DVR RECORDING DEVICES



Y3K

XUSB4DVR

★★★★★



If you want to monitor several rooms or areas, a four-channel CCTV recorder could be ideal. We recommend Y3K's XUSB4DVR, which costs just £59 including VAT. It can record from four cameras and two microphones and offers motion detection and a playback system so you can easily see what's been going on in your absence. It's excellent value and our Best Buy.